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FILE 'CEN' ENTERED AT 14:12:05 ON 10 JUL 2005  
COPYRIGHT (C) 2001 American Chemical Society (ACS)

=> s terbium or Tb  
L1 65967 TERBIUM OR TB

=> s Auminum or Aluminium or Al  
L2 1304000 AUMINUM OR ALUMINIUM OR AL

=> s Aluminum or Aluminium or Al  
L3 1746448 ALUMINUM OR ALUMINIUM OR AL

=> s LFZ or (laser float3 zone)  
3 IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s LFZ or (laser float zone)  
ZONE) IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s LFZ or (laser float? zone)  
L4 187 LFZ OR (LASER FLOAT? ZONE)

=> l1 and l3 and l4  
L1 IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s l1 and l3 and l4

L5 3 L1 AND L3 AND L4

=> d 1-3 ibib abs

L5 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:481503 CAPLUS

DOCUMENT NUMBER: 141:182175

TITLE: Growth of **terbium aluminum** garnet  
(Tb3Al5O12; TAG) single crystals by the hybrid  
**laser floating zone**  
machine

AUTHOR(S): Geho, Mikio; Sekijima, Takenori; Fujii, Takashi

CORPORATE SOURCE: Murata Manufacturing Co. Ltd., Nagaokakyo-shi, Kyoto,  
617-8555, Japan

SOURCE: Journal of Crystal Growth (2004), 267(1-2), 188-193  
CODEN: JCRGAE; ISSN: 0022-0248

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Incongruent melting of **Tb Al** garnet (Tb3Al5O12; TAG)  
single crystals has the largest Verdet constant, based on the Faraday  
rotation, among transparent materials, even though no practically  
applicable size of TAG single crystal has yet been grown. To grow TAG  
single crystals, a hybrid **laser floating zone**  
growth machine was designed, in which four CO2 gas lasers and four halogen  
lamps were placed around a pedestal. This is capable of both uniform  
laser heating and lamp pre-heating. TAG single-crystal rods of 3 mm in  
diameter were grown, which were suitable for the use in optical devices. The  
crystals showed a full-width at half-maximum in  $\geq 27$  arcsec by the  
x-ray rocking curve measurement. The examined growth directions were  
randomly dispersed under the no-seed used growth condition. Several  
optical property evaluations confirmed successful results for high  
transmittance qualities and a larger Verdet constant than the conventional  
Tb3Ga5O12 crystals.

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:159067 CAPLUS

DOCUMENT NUMBER: 140:207890

TITLE: Method for manufacturing **terbium**  
**aluminium**-based paramagnetic garnet single  
crystal

INVENTOR(S): Sekijima, Takenori; Geho, Mikio

PATENT ASSIGNEE(S): Murata Manufacturing Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE       |
|--|------|----------|-----------------|------------|
| EP 1391544   | A2   | 20040225 | EP 2003-18876   | 20030819   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK |      |          |                 |            |
| JP 2004131369  | A2   | 20040430 | JP 2003-290578  | 20030808   |
| JP 3642063   | B2   | 20050427 |                 |            |
| US 2004035357  | A1   | 20040226 | US 2003-643985  | 20030820   |
| PRIORITY APPLN. INFO.:   |      |          | JP 2002-242047  | A 20020822 |
|  |      |          | JP 2002-275990  | A 20020920 |
|  |      |          | JP 2003-290578  | A 20030808 |

AB A method for manufacturing a **Tb Al**-based paramagnetic garnet  
single crystal which can easily produce a TAG single crystal having a  
large Faraday effect and a high light-transmittance even in the visual  
light range is provided, and the crystal, therefore is, usable as a  
material for a magneto-optical device. The method is for manufacturing a

4. " **Tb Al**-based paramagnetic garnet single crystal grown by a **laser float-zone** method using a raw material rod made of paramagnetic garnet containing at least **Tb** and **Al** and a seed crystal, while at least one of the raw material rod and the seed crystal is porous, and the method can include the steps of preparing the raw material rod, preparing the seed crystal, melt-joining the raw material rod and the seed crystal, heat-melting the joint of the seed crystal and the raw material rod by application of optical energy thereto so as to prepare a melt zone, and cooling the resulting melt zone.

L5 ANSWER 3 OF 3 INSPEC (C) 2005 IEE on STN

ACCESSION NUMBER: 2004:8102532 INSPEC  
DOCUMENT NUMBER: A2004-21-8110H-001; B2004-10-0510-035  
TITLE: Growth of **terbium aluminum** garnet  
(Tb3Al5O12; TAG) single crystals by the hybrid  
**laser floating zone**  
machine.  
AUTHOR: Geho, M.; Sekijima, T.; Fujii, T. (Murata Manuf. Co.  
Ltd., Kyoto, Japan)  
SOURCE: Journal of Crystal Growth (15 June 2004) vol.267,  
no.1-2, p.188-93. 11 refs.  
Published by: Elsevier  
Price: CCCC 0022-0248/2004/\$30.00  
CODEN: JCRGAE ISSN: 0022-0248  
SICI: 0022-0248(20040615)267:1/2L188:GTAG;1-#  
DOCUMENT TYPE: Journal  
TREATMENT CODE: Experimental  
COUNTRY: Netherlands  
LANGUAGE: English

DN A2004-21-8110H-001; B2004-10-0510-035

AB Incongruent melting of **terbium aluminum** garnet  
(Tb3Al5O12; TAG) single crystals has the largest Verdet constant, based on the Faraday rotation, among "transparent" materials, even though no practically applicable size of TAG single crystal has yet been grown. To grow TAG single crystals, we designed a hybrid **laser floating zone** growth machine, in which four CO2 gas lasers and four halogen lamps were placed around a pedestal. This is capable of both uniform laser heating and lamp pre-heating. We successfully grew TAG single-crystal rods of 3 mm in diameter, which were suitable for the use in optical devices. The crystals showed a full-width at half-maximum in as little as 27 arcsec by the X-ray rocking curve measurement. The examined growth directions were randomly dispersed under the no-seed utilized growth condition. Several optical property evaluations confirmed successful results for high transmittance qualities and a larger Verdet constant than the conventional Tb3Ga5O12 crystals.

ANSWER 1 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:481503 CAPLUS  
 DOCUMENT NUMBER: 141:182175  
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 CORPORATE SOURCE: Murata Manufacturing Co. Ltd., Nagaokakyo-shi, Kyoto,  
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 SOURCE: Journal of Crystal Growth (2004), 267(1-2), 188-193  
 CODEN: JCRGAE; ISSN: 0022-0248  
 PUBLISHER: Elsevier  
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 arcsec by the x-ray rocking curve measurement. The examined growth  
 directions were randomly dispersed under the no-seed used growth  
 condition. Several optical property evaluations confirmed successful  
 results for high transmittance qualities and a larger Verdet constant than  
 the conventional Tb3Ga5O12 crystals.

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:159067 CAPLUS  
 DOCUMENT NUMBER: 140:207890  
 TITLE: Method for manufacturing **terbium**  
 aluminium-based paramagnetic garnet single crystal  
 INVENTOR(S): Sekijima, Takenori; Geho, Mikio  
 PATENT ASSIGNEE(S): Murata Manufacturing Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 18 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE       |
|--|------|----------|-----------------|------------|
| EP 1391544   | A2   | 20040225 | EP 2003-18876   | 20030819   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK |      |          |                 |            |
| JP 2004131369  | A2   | 20040430 | JP 2003-290578  | 20030808   |
| JP 3642063   | B2   | 20050427 |                 |            |
| US 2004035357  | A1   | 20040226 | US 2003-643985  | 20030820   |
| PRIORITY APPLN. INFO.:   |      |          | JP 2002-242047  | A 20020822 |
|  |      |          | JP 2002-275990  | A 20020920 |
|  |      |          | JP 2003-290578  | A 20030808 |

AB A method for manufacturing a **Tb** Al-based paramagnetic garnet single  
 crystal which can easily produce a TAG single crystal having a large  
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 a magneto-optical device. The method is for manufacturing a **Tb**  
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**float-zone** method using a raw material rod made of  
 paramagnetic garnet containing at least **Tb** and Al and a seed  
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 is porous, and the method can include the steps of preparing the raw material

rod, preparing the seed crystal, melt-joining the raw material rod and the seed crystal, heat-melting the joint of the seed crystal and the raw material rod by application of optical energy thereto so as to prepare a melt zone, and cooling the resulting melt zone.

L3 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:173749 CAPLUS

DOCUMENT NUMBER: 132:229235

TITLE: Growth of pure and RE3+-doped Y2O3 single crystals by LHPG technique

AUTHOR(S): Goutaudier, C.; Ermenoux, F. S.; Cohen-Adad, M. T.; Moncorge, R.

CORPORATE SOURCE: Laboratoire de Physico-Chimie des Matériaux Luminescents, UMR 5620 CNRS, Université Claude Bernard de Lyon I, Villeurbanne, 69622, Fr.

SOURCE: Journal of Crystal Growth (2000), 210(4), 694-698

CODEN: JCRGAE; ISSN: 0022-0248

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB High-quality and crack-free Y2O3 single crystals containing low concns. of Tm3+, Tb3+ and Yb3+ were obtained. The crystals were grown as monocryst. fibers by using a **floating zone** method with **laser** heating (**laser**-heated pedestal growth).

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:701743 CAPLUS

DOCUMENT NUMBER: 132:43894

TITLE: Magnetic, optical and microwave properties of rare-earth-substituted fibrous yttrium iron garnet single crystals grown by **floating zone** method

AUTHOR(S): Sekijima, Takenori; Kishimoto, Hiroshi; Fujii, Takashi; Wakino, Kikuo; Okada, Masakatsu

CORPORATE SOURCE: Faculty of Science and Engineering, Ritsumeikan University, Shiga, 525-8577, Japan

SOURCE: Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1999), 38(10), 5874-5878

CODEN: JAPNDE; ISSN: 0021-4922

PUBLISHER: Japanese Journal of Applied Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The crystallog., magnetic, optical and microwave propagation properties have been studied of fibrous rare-earth-substituted Y2.7R0.3Fe5O12 (R:YIG) single crystals, grown by a simple **floating zone** (FZ) method with Y Al garnet (YAG) **laser** heating assisted by IR irradiation, for all rare-earth elements. The 1st purpose of the studies was to seek outstanding properties of R:YIG crystals and the 2nd aim was to obtain data to develop crystals with complex properties, such as large Faraday rotation and low saturation magnetization, by substituting ≥2 rare-earth elements for Y into the YIG crystal. The lattice constant, saturation magnetization, Faraday rotation, optical absorption coefficient, full-width at half maximum (ΔH) of ferromagnetic resonance and microwave propagation in magnetostatic wave (MSW) modes were measured for R:YIG single crystals. Low saturation magnetization in Gd:YIG and Tb:YIG, large Faraday rotation in Ce:YIG and low loss propagation of MSW in Lu:YIG were found. The comprehensive results will also contribute to identifying new materials applicable in for optical and microwave devices using R:YIG crystals.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 6 INSPEC (C) 2005 IEE on STN

ACCESSION NUMBER: 2004:8102532 INSPEC

DOCUMENT NUMBER: A2004-21-8110H-001; B2004-10-0510-035

TITLE: Growth of **terbium** aluminum garnet (Tb<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>; TAG) single crystals by the hybrid **laser floating zone** machine.  
AUTHOR: Geho, M.; Sekijima, T.; Fujii, T. (Murata Manuf. Co. Ltd., Kyoto, Japan)  
SOURCE: Journal of Crystal Growth (15 June 2004) vol.267, no.1-2, p.188-93. 11 refs.  
Published by: Elsevier  
Price: CCCC 0022-0248/2004/\$30.00  
CODEN: JCRGAE ISSN: 0022-0248  
SICI: 0022-0248(20040615)267:1/2L.188:GTAG;1-#

DOCUMENT TYPE: Journal  
TREATMENT CODE: Experimental  
COUNTRY: Netherlands  
LANGUAGE: English

DN A2004-21-8110H-001; B2004-10-0510-035

AB Incongruent melting of **terbium** aluminum garnet (Tb<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>; TAG) single crystals has the largest Verdet constant, based on the Faraday rotation, among "transparent" materials, even though no practically applicable size of TAG single crystal has yet been grown. To grow TAG single crystals, we designed a hybrid **laser floating zone** growth machine, in which four CO<sub>2</sub> gas **lasers** and four halogen lamps were placed around a pedestal. This is capable of both uniform **laser** heating and lamp pre-heating. We successfully grew TAG single-crystal rods of 3 mm in diameter, which were suitable for the use in optical devices. The crystals showed a full-width at half-maximum in as little as 27 arcsec by the X-ray rocking curve measurement. The examined growth directions were randomly dispersed under the no-seed utilized growth condition. Several optical property evaluations confirmed successful results for high transmittance qualities and a larger Verdet constant than the conventional Tb<sub>3</sub>Ga<sub>5</sub>O<sub>12</sub> crystals.

L3 ANSWER 6 OF 6 INSPEC (C) 2005 IEE on STN

ACCESSION NUMBER: 1999:6425054 INSPEC

DOCUMENT NUMBER: A2000-02-7820L-001; B2000-01-3110E-017

TITLE: Magnetic, optical and microwave properties of rare-earth-substituted fibrous yttrium iron garnet single crystals grown by **floating zone** method.

AUTHOR: Sekijima, T.; Kishimoto, H. (Fac. of Sci. & Eng., Ritsumeikan Univ., Kusatsu, Japan); Fujii, T.; Wakino, K.; Okada, M.

SOURCE: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (Oct. 1999) vol.38, no.10, p.5874-8. 19 refs.

Published by: Publication Office, Japanese Journal Appl. Phys

CODEN: JAPNDE ISSN: 0021-4922

SICI: 0021-4922(199910)38:10L.5874:MOMP;1-K

DOCUMENT TYPE: Journal  
TREATMENT CODE: Experimental  
COUNTRY: Japan  
LANGUAGE: English

DN A2000-02-7820L-001; B2000-01-3110E-017

AB We studied the crystallographic, magnetic, optical and microwave propagation properties of fibrous rare-earth-substituted Y<sub>2</sub>.7R<sub>0.3</sub>Fe<sub>5</sub>O<sub>12</sub> (R:YIG) single crystals, grown by a simple **floating zone** (FZ) method with yttrium aluminium garnet (YAG) **laser** heating assisted by infrared irradiation, for all rare-earth elements. The first purpose of our studies was to seek outstanding properties of R:YIG crystals and the second aim was to obtain data in order to develop crystals with complex properties, such as large Faraday rotation and low saturation magnetization, by substituting two or more rare-earth elements for Y into the YIG crystal. The lattice constant, saturation magnetization, Faraday rotation, optical absorption coefficient, full-width at half maximum ( $\Delta H$ ) of ferromagnetic resonance and microwave propagation in magnetostatic wave (MSW) modes were measured for

• R:YIG single crystals. Low saturation magnetization in Gd:YIG and Tb:YIG, large Faraday rotation in Ce:YIG and low loss propagation of MSW in Lu:YIG were found. Our comprehensive results will also contribute to identifying new materials applicable in for optical and microwave devices utilizing R:YIG crystals.

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